

CLAIMS

We claim:

1. In a telecommunications network represented by a service model dependency graph having a plurality of components in a set of nested levels indicating upstream and downstream components, the method of handling alerts comprising the steps of:

receiving one or more alerts for a component;

generating a handle for each received alert wherein said handle includes information about the alert;

generating a component status indicator for the component based on a set of pre-defined rules which rules utilize the component status indicators of downstream components and information from the handles generated from alerts received at the component; and,

associating the results of the rule evaluation, the handles used by the rule evaluation and the component status indicators of the downstream components with the component status indicator for the component.

2. The method of claim 1 further comprising the step of associating with the component status indicator the path each handle has taken through the service model dependency graph.

3. The method of claim 1 wherein the handle includes information about the type of alert, the time of the alert and the duration of the alert.

4. The method of claim 1 further comprising the step of generating a service impact index at the top level of the service model dependency graph wherein the service impact index is an indicator of the impact of downstream alerts on the quality of service.

5. The method of claim 4 further comprising the step of generating a total impact index by summing the service impact indexes for a plurality of services.
6. The method of claim 5 further wherein the total impact index is calculated by summing the service impact index for each service multiplied by a predetermined weighting factor.
7. The method of claim 2 further comprising the step of performing root cause analysis for a service-impacting component status indicator.
8. The method of claim 7 wherein the step of performing root cause analysis for a service impacting component status indicator comprises the steps of:
 - retrieving the path the service-affecting handle or handles have taken through the service model dependency graph;
 - at each component through which the service affecting handles or handles have taken retrieving the information associated with the component status indicator and the associated handles for the component.
9. The method of claim 4 further comprising the step of prioritizing the impact of the alerts based on the service impact index.
10. The method of claim 5 further comprising the step of prioritizing the impact of the alerts based on the total impact index.
11. The method of claim 1 wherein the step of generating a component status indicator for one or more components is performed in the central office housing the component.

12. The method of claim 1 wherein the steps of generating component status indicators are performed in a central network operations center.

13. The method of claim 10 wherein the step of generating a total impact index and prioritizing the impact of alerts is performed in a central network operations center.

14. The method of claim 1 further comprising the step of storing alerts that are not service affecting in an alert inventory.

15. A system for the handling of alerts in a telecommunications network, wherein the network is modeled as a service model dependency graph having a plurality of components in a set of upstream and downstream levels, comprising:

- a means for receiving alerts at a component of the network;
- a means for generating a handle in response to each alert wherein the handle provides information about the alert;
- a rule engine which utilizes the component status indicator of one or more downstream components and the handles generated in response to alerts to generate a component status indicator for each component; and,
- a means for associating the results of the rule evaluation, the handles used by the rule evaluation and the component status indicators of the downstream components with the component status indicator for each component.

16. The system of claim 15 wherein the rule engine resides at the component.

17. The system of claim 15 further comprising a network operations center in communication with each component and wherein the rule engine performs the rule evaluation to generate the component status indicator for each component.
18. The system of claim 17 wherein the network operations center further comprises a means for using the alert information in the handles to perform root cause analysis.
19. The system of claim 17 wherein the network operations center further comprises a means for generating a service impact index indicative of the quality of service impact of alerts that reach the top level of the service model dependency graph.
20. The system of claim 19 wherein the network operations center further comprises a means for generating a total impact index indicative of the impact on the quality of service across a plurality of services.